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To cite this article: Alisha Utter , Mona Seymour , V. Ernesto Méndez & Jason Parker (15 Aug 2026): Intersectionalities within alternative agriculture: veganic agriculture and agroecology, *Agroecology and Sustainable Food Systems*, DOI: [10.1080/21683565.2026.2710285](https://doi.org/10.1080/21683565.2026.2710285)

To link to this article: <https://doi.org/10.1080/21683565.2026.2710285>



Published online: 15 Aug 2026.



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Intersectionalities within alternative agriculture: veganic agriculture and agroecology

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ABSTRACT

Veganic agriculture, which excludes animal husbandry and animal-based and synthetic inputs, and agroecology share a spectrum of similarities in their approaches and visions for transforming the prevailing food system. However, academic literature has not extensively or systematically compared the two. There is timely value in doing so as we collectively seek adaptive and innovative approaches to the mounting challenges throughout the food system. Drawing on interviews completed in 2018 with 25 veganic farmers (representing 19 farms) across the United States, this paper proposes 5 key veganic principles, which are then discussed in relation to the 13 principles of agroecology. Findings suggest veganic agriculture and agroecology share a significant amount of overlap related to land stewardship practices, knowledge development and sharing, and an underlying distinction from the industrial agrifood system. The only explicit point of divergence pertains to the role of animal husbandry, which is integral to agroecological systems and eschewed in veganic systems. Even with this area of potential misalignment, the number of similarities between the two approaches well positions them for future synergistic collaborations, both practical and political.

KEYWORDS

Sustainable agriculture; veganic agriculture; agroecology principles; plant-based systems; land stewardship

SUSTAINABLE DEVELOPMENT GOALS

SDG 12: Responsible consumption and production; SDG 13: Climate action; SDG 3: Good health and well-being; SDG 17: Partnerships for the goals; SDG 15: Life on land

Introduction

Agroecology has influenced and evolved simultaneously with various alternative agriculture approaches (Gliessman et al. 2022). One expression of agroecology is through veganic agriculture, also referred to as “vegan organic” or “stockfree organic” farming outside of North America (Schmutz and Foresi 2017). However, not all agroecology is inclusive to veganic agriculture and not all veganic agriculture is expressed as agroecology. Veganic farming draws on a range of plant-based, fauna-friendly management strategies while avoiding the use of animal labor or farmed, fished, or wild harvested animal byproducts, such as manure, bloodmeal, bonemeal, fishmeal, and guano (Utter and

Seymour 2021). The current literature base connecting veganic agriculture with agroecology remains limited on both practical and theoretical levels. In this paper we discuss similarities and opportunities for bridging agroecological and veganic approaches by examining them through the lens of the agroecological principles put forth by Wezel et al. (2020), and veganic principles emergent through our 2018 study of veganic farmers in the United States.

In comparison to veganic agriculture, the agroecology research literature base is more widely developed. There has also been a growing area of inquiry seeking to compare agroecology with other alternative agricultural approaches, such as organic agriculture (e.g., Bellon et al. 2011; Migliorini and Wezel 2017). This paper expands on the existing comparative discussions of agroecology by adding a veganic dimension. Through an analysis of the practices reported by veganic farmers across the United States, we develop a set of five veganic principles, which we then compare to agroecological principles, using the thirteen put forth by Wezel et al. (2020). The goals of this paper are to: (1) develop a set of veganic principles by drawing on field work with veganic farmers; (2) provide a foundational discussion on the parallels of veganic agriculture and agroecology; and (3) identify opportunities to leverage these parallels. We begin with a broad overview of the background of agroecology and veganic agriculture literatures, including an examination of the small literature on the intersections of agroecology and veganic agriculture. We then outline agroecological principles before reviewing our research findings with US veganic farmers, leading to a comparative discussion on agroecological and veganic principles. The article concludes with thoughts on potentials for veganic-agroecology alliances in the face of industrial agricultural abuses and “externalities” and opportunities for cross-pollination around movement-building and practical farming challenges.

Agroecology background

As noted by Altieri, “the science and the practice of agroecology are as old as the origins of agriculture” and are rooted in indigenous and peasant communities (Altieri 1995, 1). In other words, various facets of agroecology may not be captured within scholarly inquiry or records. However, the academic literature base provides some useful benchmarks for understanding agroecology’s evolution. The term “agroecology” was first published in academia in the 1930s by agronomist Basil Bensing in relation to his research on corn varieties in Russia. Subsequently, practices cited as agroecological began to gain more traction in the scientific literature in the 1980s, often in the context of agricultural ecology in the tropics and subtropics of Mesoamerica (e.g., Altieri and Anderson 1986; Migliorini and Wezel 2017). In the 1990s, the sociopolitical movement grew, largely citing food sovereignty as a regional and international goal (Wezel et al. 2009). Méndez et al. (2013) propose there are two modern

prevailing perspectives on agroecology: (1) the application of agroecology as a tool to reinforce and/or further expand scientific research frameworks grounded in the Western interpretation of natural sciences and (2) agroecology as a transdisciplinary, participatory, and action-oriented approach influenced by ecology and agronomy and engaged in social, cultural, political, and economic issues related to the agrifood system. Similarly, Sanderson Bellamy and Ioris (2017) posit two “family groups” of agroecology: scientific and practical/political. The former manifests as a “narrow, technology-focused agroecology, associated with Western scientific epistemologies and methodologies, and analyses of food crises that tends to concentrate only on technological and procedural interventions” (3). The latter is more radical and inclusive to ecology *and* “a participatory social movement towards autonomy and sustainability in food production” (3).

Dichotomies are useful, however, this paper relies on a tripartite framework defining agroecology as a science, practice, and movement (Wezel et al. 2009). It also embraces the vision promoted by Méndez et al. (2013) of agroecology as a means of sustainably transforming the agrifood system, which includes a research approach that is both inclusive and transdisciplinary. More simply put, when generally referring to agroecology within this paper, we rely on the concept put forth by McKay et al. (2025, 1) of agroecology as “the application of ecological and social principles to the design and management of healthy, equitable and resilient food systems.” Within this, we recognize the importance of agroecological knowledge originating in the grassroots, including at the farm-scale, and then amplified and evolved through mechanisms such as knowledge co-creation (Utter et al. 2021). There are increasing calls for agroecology to expand from on-farm agroecological practices to structural transformation at the agrifood system scale. For instance, Sanderson Bellamy and Ioris (2017) advocate for an agroecology that includes efficiency; re-localization; heightened communication between producers and consumers; and improved consumer health and mindfulness in choices. In addition to the theoretical frameworks and practical strategies, principles remain central to agroecology (Méndez et al. 2020).

There is a continually transforming body of literature on agroecological principles. Throughout this paper, we focus on the 13 principles put forth by Wezel et al. (2020), which were developed through an extensive review of the literature (Table 1). While we mainly discuss agroecological and veganic principles at the farm-scale (as relevant to veganic farmers and their respective farms), we explore potential applications in the scope of the larger global agrifood system within the paper’s conclusion.

Table 1. Thirteen agroecological principles (adapted from Wezel et al. 2020).

Number	Principle	Details
1	Recycling	Preferentially use local renewable resources and close as far as possible resource cycles of nutrients and biomass.
2	Input Reduction	Reduce or eliminate dependency on purchased inputs and increase self-sufficiency.
3	Soil Health	Secure and enhance soil health and functioning for improved plant growth, particularly by managing organic matter and enhancing soil biological activity.
4	Animal Health	Ensure animal health and welfare.
5	Biodiversity	Maintain and enhance diversity of species, functional diversity and genetic resources and thereby maintain overall agroecosystem biodiversity in time and space at field, farm and landscape scales.
6	Synergy	Enhance positive ecological interaction, synergy, integration and complementarity amongst the elements of agroecosystems (animals, crops, trees, soil and water).
7	Economic Diversification	Diversify on-farm incomes by ensuring that small-scale farmers have greater financial independence and value addition opportunities while enabling them to respond to demand from consumers.
8	Co-creation of Knowledge	Enhance co-creation and horizontal sharing of knowledge including local and scientific innovation, especially through farmer-to-farmer exchange.
9	Social Values and Diets	Build food systems based on the culture, identity, tradition, social and gender equity of local communities that provide healthy, diversified, seasonally and culturally appropriate diets.
10	Fairness	Support dignified and robust livelihoods for all actors engaged in food systems, especially small-scale food producers, based on fair trade, fair employment and fair treatment of intellectual property rights.
11	Connectivity	Ensure proximity and confidence between producers and consumers through promotion of fair and short distribution networks and by re-embedding food systems into local economies.
12	Land and Natural Resource Governance	Strengthen institutional arrangements to improve, including the recognition and support of family farmers, smallholders and peasant food producers as sustainable managers of natural and genetic resources.
13	Participation	Encourage social organisation and greater participation in decision-making by food producers and consumers to support decentralised governance and local adaptive management of agricultural and food systems.

Veganic background

The term “veganic” was first proposed by English author Geoffrey Rudd in the mid-1950s, combining the first two letters of “vegetable” and the last five letters of “organic” (O’Brien 1986, 9). Veganic gardening was further popularized by Rosa Dalziel O’Brien (O’Brien 1956) and her son Kenneth Dalziel O’Brien in the United Kingdom (O’Brien 1986). However, there is an indication of the documented promotion of veganic agriculture earlier in the twentieth century without it being referred to explicitly as “veganic.”¹ There is also evidence of applications of plant-based practices throughout history globally, likely driven by accessibility to resources and inputs for crop production (Nobari 2021). The prevailing interpretation of the term “veganic” today is that it is a combination of “vegan” and “organic,” describing organic production with only plant-based inputs (e.g., Vegan Organic Network n.d.).

Despite the “organic” root of the term “veganic,” not all veganic farms have organic – or any – certification. There are several certification opportunities that align with veganic agriculture, however, including the Stockfree Organic Standards in Europe (est. 2007) (Stockfree Organic [n.d.](#)); the Biocyclic Vegan Standard in Europe and Asia (est. 2017) (Biocyclic Vegan International [2024](#)); and, as of 2023, the North American Veganic Certification Standard (NAVCS) which is available worldwide (NAVCS [2024](#)). Though the technical details and ethical groundings of these standards vary, they all prohibit the use of animal-based and synthetic inputs and commercial livestock farming, and promote plant-based soil-building methods and respect for pests and wildlife.

Veganic agriculture appears in the academic literature beginning around the turn of the 20th century. This narrow literature base has been most heavily oriented toward research trials comparing the performance of veganic and associated crop production methods to organic and/or chemical-based production. Findings from field trials consistently indicate strong performance of animal-free approaches in areas including yield, soil organic matter enhancement, and resource inputs (e.g., Drinkwater et al. [1998](#); Pimentel et al. [2005](#); Cormack [2006](#); Eisenbach et al. [2018](#); Roussis et al. [2019](#); Niether et al. [2023](#)). The literature has most notably evolved to include discussion of the relationship between veganic agriculture and sustainable agriculture and food systems. Animal-free organic agriculture is framed as a set of viable, underappreciated alternative agricultural approaches that are regenerative, climate-friendly, energy-efficient, and land-sparing (e.g., Kassam and Kassam [2021](#); Nobari [2021](#); Hirth [2022](#); Seymour [2023](#)).

Outside of academic literature, there are a variety of resources generated by farmers on veganic practices. For example, at the former Woodleaf Farm in northern California, Helen Atthowe and the late Carl Rosato developed 10 guiding stewardship principles. These range from diversification of the soil food web to an emphasis on nutrient cycling (Rolett [2020](#)). More broadly, Canadian farmer Jimmy Videle outlines tenets through recommended practices for small-scale gardeners and farmers in North America in “The Veganic Grower’s Handbook” (Videle [2022](#)). The principles of veganic farming, which emerged through our research with veganic farmers in the United States, are discussed in Section 4.1.

Literature review

Agroecology and veganic (vegan organic) agriculture

There have been limited scholarly inquiries broadly considering veganic agriculture’s relationship to other sciences, practices, or movements, especially within the US. However, Nobari ([2021](#)), Kassam and Kassam ([2021](#)), and Seymour ([2023](#)) provide foundational writings on veganic agriculture

with acknowledgment of direct and indirect connections to agroecology in theory and practice. Specifically, Kassam and Kassam (2021) see veganic agriculture and other forms of alternative agriculture as complementary approaches that could compromise a holistic paradigm that can more appropriately encompass “the interconnected, multidimensional, and intersecting nature of all areas of life we are concerned with” (420). Additionally, Cusworth et al. (2021) discuss veganic systems being encompassed within the scope of agroecology, especially through the centralization of legumes in food futures in Europe.

In North America, Nobari co-founded the nonprofit “Seed the Commons,” which seeks to promote an agroecology inclusive to “nonhuman animals in our circle of compassion and moral concern” (379), using veganism to set the parameters for generating solutions. This lens critically considers the role of corporatization, industrialization, and globalization in creating and upholding structural inequalities within the food system. Nobari terms the pursuit of corporate profits at the expense of communities and localized food systems as “modern-day colonization.” Relatedly, agroecology seeks to dismantle and reform the prevailing food system through grassroots, community-based processes. This is exemplified through efforts such as La Via Campesina, which is “more aptly called a global peasant movement and as such their collective approach to advancing their goals is varied” (Nobari 2021, 378).

Nobari makes a key intervention in introducing vegan agroecology to counter the dominant narrative in sustainable and regenerative farming discourse that small-scale animal husbandry is the traditional, ecological alternative to the corporate food system:

Agroecology and food sovereignty are necessary for building an ethical food system, but they are not sufficient. It is time to liberate nonhuman animals from millennial institutions of domination as we liberate ourselves from our current yokes. By bringing together agroecology and animal liberation, we arrive at the concept of vegan agroecology. A new food system can be created and sustained based on an ethic of justice for all. (391–392)

Although the term “vegan agroecology” may be contemporary, plant-based systems are inherent to the origins of the science and practice of agroecology. This is apparent in milpa systems, which traditionally comprise corn, beans, and squash without a reliance on farm animal labor or byproducts. Nobari expands:

In the milpa system, the beans complement the corn by fixing atmospheric nitrogen in the soil, which is then used by the corn and avoids depleting the soil. Agroecology scholarship has also touted the modern use of green manures, which uses the same principle (soil fertility is increased by growing legumes that fix nitrogen in the soil). Despite this, many agroecology advocates present the integration of crops and farm animals as a default aspect of closed-looped systems. (382)

Over time, milpa began integrating farm animals. This could be for various reasons, including animals being seen as a form of capital and a result of positive feedback in the voices promoting and documenting agroecology (often with a Euro-centric cultural bias) resulting in the further normalization of animal husbandry within traditional systems. As observed by Nobari (2021): “European influence put the cow in the milpa, then in turn the presence of the cow affirms the (conscious or unconscious) notion that ‘tradition’ in a generic, universal, and even indigenous sense includes animal domestication” (383). In other words, forces of oppression, including colonization and animal exploitation, have gradually shifted the *perception* of the roots of agroecology to one less compatible with a vegan agroecology.

Within her analysis, Nobari dismantles the perceived assumptions which would preclude agroecology from being compatible with veganic agriculture. Instead, she highlights the various ways in which the two approaches share the common goal of shifting away from systems of oppression to human and non-human animals. An important part of generating these parallels is overcoming misnomers. For example, although many perceive veganic agriculture as animal-free, in reality, “Where organic farms see domesticated animals as the animal component in a system, veganic farms can be organized with wildlife in mind.” (392).

Similar to Nobari, Kassam and Kassam (2021) call for an epistemological and ethical shift that promotes a “Conservation Agriculture-based Veganic Agroecology” through: (1) Holistic paradigms and mindsets inclusive to diversity and complexity; (2) A narrative of abundance acknowledging the true roots of hunger and poverty; (3) Ecological and multifunctional agricultural paradigms; (4) Decentralized power in food and economic systems; (5) Diets promoting human and planetary health; and (6) Social movements and civil society supporting radical transformative change and food sovereignty. This paradigm bridges the three agricultural paradigms to dismantle systems of exploitation and oppression, especially those linked to anthropocentrism/speciesism, while supporting a holistic ecology rooted in localized knowledge.

Seymour (2023) highlights the potential for veganic agriculture, referred to as animal-free organic agriculture or AFOA, to become more integral to the sustainable agriculture movement as it shares numerous values with the animal-based forms of agriculture centered in the movement, including: implementing practices promoting soil health; growing without chemicals or genetically modified organisms; incorporating natural landscape components within farm ecosystems; leveraging agriculture as a means for climate mitigation; and identifying intensive livestock production as problematic. Seymour notes that there are a variety of circumstances that may catalyze the adoption of alternatives to animal-based agriculture in the foreseeable future out of necessity and/or natural evolution. These range from environmental (e.g., climate change) to biological (e.g., zoonotic pandemics) to sociocultural

(e.g., consumer demand shifting to plant-based foods) to political (e.g., food safety and urban agriculture policy). Though agroecology was only one of the many approaches discussed in context to AFOA and the larger sustainable agriculture movement, each of these aforementioned elements is applicable to the comparative discussion of veganic agriculture and agroecology.

Across the spectrum of expressions of veganic agriculture and agroecology, there is a substantial opportunity for synergies achieving shared processes and outcomes related to a more sustainable food system.

Materials and methods

The subsequent findings and discussion are informed by fieldwork that took place in the United States in 2018 with 25 veganic farmers representing 19 veganic farms (Table 2). Initial participants were identified using an online map of veganic farms, which indicated approximately 56 US veganic farms in operation at the time of recruitment, the majority of which were market gardens (Seymour 2018). Additional farmers were recruited using snowball sampling methods. The participation criteria were for farmers to: (1) self-identify as using veganic methods; (2) grow diversified produce in soil (thus, operations such as hydroponics were excluded); and (3) sell farm products commercially (there was no minimum sales requirement). Out of the identified farms, 44 farms met these criteria and 39 were targeted via online and/or phone recruitment.

Participants took part in two portions of data collection, as follows: (1) a quantitative survey dispatched via the online KoBo Toolbox platform that gathered farm information/farmer demographics and (2) a qualitative, semi-structured interview on veganic farming practices, beliefs, and experiences. Respondents completed the survey ahead of their interview, answering around 35 questions on farm products and operations, farm financials, and respondent demographics. The survey results were used to inform Table 2 and are discussed in greater detail in “Veganic farming in the United States: farmer perceptions, motivations, and experiences” (Seymour and Utter 2021).

Interviews followed a two-part interview guide, firstly covering farming experiences and beliefs, attitudes toward veganic farming, the veganic learning process, veganic farming challenges, and thoughts on supporting the growth of veganic agriculture. The second part of the guide covered technical information, including soil health practices, pest management, product sourcing, and marketing. Participants were interviewed on-farm in the majority of cases, with six interviews occurring by phone/video when a visit could not be arranged. Interviews lasted two hours on average, but ranged from one to four hours in length. These interviews were audio recorded; transcribed with Temi transcription software; and reviewed/edited for accuracy by the authors. They were then coded and analyzed within Dedoose.

Table 2. Farm and farm operator characteristics.

Participant name(s)	Farm location by US Census Division; acreage under cultivation (2017); crops and products	Farmer birth year; gender; race; highest level of education completed; year that they began farming veganically
Linda & Frank	Pacific; 1; vegetables, berries, herbs	Not indicated; Female; American Indian or Alaskan Native, White; Associates or technical certification; 2013
Jane	Pacific; .25; vegetables	1974; Female; White; Bachelors degree; 2015
Gary	Pacific; 1.5; vegetables, berries, tree fruits, herbs, plant starts and/or nursery plants, value-added products	1962; Male; White; High school; 2014
Wendy	Pacific; 1; vegetables, berries, tree fruits, flowers, herbs, nuts and/or seeds, value-added products	1980; Female; White; Associates degree or technical certification; 2011
Sarah & Tony	Pacific; 10; vegetables, tree fruits, nuts and/or seeds	1959; Female; White; Masters degree or equivalent; 2007
Richie	Pacific; 0.5; vegetables, berries, tree fruits, flowers, herbs, mushrooms, nuts and/or seeds, plant starts and/or nursery plants	1979; Male; Other; High school; 2014
Brendan	Pacific; 1; vegetables, berries, flowers, herbs, field crops, small grains, nuts and/or seeds, plant starts and/or nursery plants	1982; Male; White; Bachelors degree; 2010
Amanda & Jeff	Pacific; 0.25; vegetables, tree fruits, herbs, plant starts and/or nursery plants	1983; Female; White; Associates degree or technical certification; 2017
Rodney	Pacific; 1.25; vegetables, flowers, herbs, plant starts and/or nursery plants	1984; Male; Asian, native Hawaiian, or other Pacific Islander, White; Bachelors degree; 2016
Roger	As above	1990; Male; Hispanic or Latino; High school; 2016
Arthur	East North Central; 2; vegetables, berries, tree fruits, flowers, herbs	1969; Male; White; Masters degree or equivalent; 2010
Cindy	East North Central; 5; vegetables, herbs	1985; Female; White; High school; 2011
Chris & Donna	East North Central; 3; vegetables, berries, flowers, herbs	1973; Male; White; High school; 2009
Jacob	New England; 2; not indicated	1949; Male; White; Bachelors degree; 1975
Patricia	New England; not indicated; vegetables, herbs, plant starts and/or nursery plants	1979; Female; Other; High school; 2010
Gina & Peter	New England; 1; vegetables, flowers, herbs, plant starts and/or nursery plants, value-added products	1977; Male; White; Bachelors degree; 2014
Nate	Middle Atlantic; 8; vegetables, berries, flowers, herbs	1986; Male; White; Less than high school; 2002
Ken	South Atlantic; 2; vegetables, berries, tree fruits, flowers, herbs, field crops, plant starts and/or nursery plants	1955; Male; White; Bachelors degree; 2000
Vincent	South Atlantic; 1; vegetables, berries, tree fruits, herbs, field crops, forest products, value-added products	1964; Male; White; Masters degree or equivalent; 2009
Raymond	South Atlantic; 0.25; vegetables, berries, tree fruits, plant starts and/or nursery plants	1954; Male; White; Masters degree or equivalent; 1985

The veganic principles presented below are based solely upon qualitative interview data. The development of the principles was guided by grounded theory and inductive inference. First, the emergent codes and sub-codes from interview analysis were thematically grouped into encompassing categories. These distinct categories were again grouped and through this process, the five principles of veganic agriculture were distilled. The examples discussed below highlight farms explicitly demonstrating each respective principle. Though each principle was relevant to all participants, the degree to which each

principle was emphasized varied between participants. Pseudonyms have been employed to maintain farmer anonymity. A limitation of this paper is the relatively small sample size, which represented approximately 34% of the identified veganic operations in the United States at the time of the research (Seymour 2018). Thus, the emergent principles may not be representative of the population at large, including that internationally.

Results

Principles of veganic agriculture

We found it useful to consider veganic agriculture through principles that are expressed by a diversity of practices influenced by factors such as regionality, scale, and accessibility of resources. Dumont et al. (2016) note that principles “allow for more flexibility, especially since they can be studied with or without context, unlike indicators and thresholds, which require considerable contextualization, since they are more precise and restrictive” (26).

There was a spectrum of practices reported and/or alluded to by veganic farmers; the commonality across all farms was the exclusion of farmed animal byproducts. Upon examining farmer practices and the motivations and intentions behind them, five common principles/ideals emerged (Table 3).

These are discussed further below, along with specific examples of practices, beliefs, and/or experiences associated with each principle.

Draw on strategies that meet or exceed US organic standards

Participants reported using techniques inspired by one or more of the following: precision agriculture/row cropping; organic agriculture; permaculture; French intensive or biointensive farming/gardening; and/or Shumei Natural Agriculture. There were instances where farmer practices were generally associated with an approach but were not specifically identified as such, while others held formal certifications such as Certified Organic.

Farmers articulated a range of perspectives on the relationship between organic and veganic farming by noting that the National Organic Program (NOP) was problematically intertwined with the prevailing agrifood system. Thus, NOP emerged not as an optimal goal, but rather a minimum set of practices. Farmers critiqued the ethical,

Table 3. Veganic farming principles in the United States.

Veganic Principles	
1	Draw on strategies that meet or exceed US Organic Standards.
2	Promote soil health and limit off-farm inputs.
3	Conserve natural resources, encourage agrobiodiversity, and embrace a whole systems approach.
4	Avoid exploitation of, and center compassion for, all sentient beings and the environment.
5	Observe, reflect, experiment, collaborate, and share knowledge.

political, and sociocultural issues surrounding commercialized organic agriculture. For instance, Sarah had relocated her previously certified operation and would only again pursue certification if the NOP successfully revised standards to include parameters promoting the humane treatment of farm animals and the protection of native ecosystems. Reflecting on her experience with the NOP, Sarah recalled: “I was kind of always a rebel. So even when I was certified organic I was questioning the organic certification and saying that it wasn’t enough and that we needed to do more ecological, organic (practices).” She went on to highlight that the ecological components (e.g., biological control and habitat building) are “more vital in veganic” than organic since organic certification standards allow for the use of insecticides, “whereas in veganic, we don’t want to kill anything.” Further, participants were critical of the practice of replacing conventional inputs with organic options. For example, Ken remarked on input substitution in saying, “Much of the organic movement is simply a replication of the industrial model of inputs using different sources.” The allowable inputs were also critiqued by farmers such as Donna and Chris, who felt strongly about avoiding GMOs on their farm, and thus, excluded plant-based fertilizers that may contain GMOs (e.g., soybean, corn, and cottonseed meal).

Inherent to the foundation of veganic agriculture, all participant farmers explicitly avoided the use of sourcing farmed animal byproducts as a soil amendment, which is also allowed within the NOP guidelines. Gina remarked on the irony of the Northeast Organic Farmers Association (NOFA) being against “factory farming” while still supporting the conventional food system through the application of animal byproducts. Peter expressed concern about the promotion of animal agriculture within the organic community:

Just thinking about the moment we’re in and cows and methane and stuff and I feel like whenever we bring that up, dairy supporters are in denial. Now, with NOFA they’ve almost gotten more fundamentalist about organic agriculture and like, “Oh no, cows are the solution.” . . . It’s even harder to have a conversation about it with that group. But I think the veganic community should be making the push to counter that and like, “No wait, we are the really low carbon solution.” We can’t chance this with cows. If there’s any possibility that there’s some methane leakage, we can’t roll the dice on that.

Across the blend of agricultural approaches reported, including those specific to organic practices, all participants directly or more abstractly acknowledged the regional and site-specific dimensions of their techniques. This informed their farming approach, from sourcing inputs to soil stewardship.

Promote soil health and limit off-farm inputs

All participants were soil-based and identified the importance of soil health regardless of land tenure arrangement. This principle captured the most reported practices from farmers, given its scope and farmers' strong emphasis on soil management through testing, amendments, cover crops, and mulches. These were both directly and indirectly framed as a means to support measured and/or observed "soil balance."

Soil testing

A key piece in minimizing the importation of inputs, particularly around crop fertility and soil health, was an understanding of soil minerals and nutrients. One tool a majority of farmers used to gain site-specific knowledge and management strategies was soil testing, which ranged from lab-generated results and recommendations to more informal field evaluations based on experience and history.

Rodney described using annual soil tests as a means to evaluate the effectiveness of cover crops and composts and make determinations on whether the existing fertilizer schedule was sufficient. Jane framed annual soil tests as providing a "macro overview," which informed how she managed pH and the nutrients she may need to purchase. Similarly, Wendy reported that the "local ag extension office has really good testing facilities" and that she used seasonal soil tests (or, as needed, if plants are "starting to look wonky") to determine a fertility approach.

Brendan farmed using a small production footprint (a process he termed "microscaling") so "a little bit of fertilizer goes a long way" and there could be a lot of damage if it were overapplied. He relied on strategically timed soil tests to inform any inputs:

We are trying to achieve a closed loop system, which means in the first three to five years we're balancing the nutrient load of our soils . . . We test them at the same time every year at the end of the season when our main season crops are out and we test them consistently at that time every year because if you test the soil in April, it's going to test different than if you've tested in October and that's because of the environmental conditions.

Similarly, Ken emphasized the importance of making large investments (e.g., minerals) to correct things early on, followed by "small incremental adjustments." Within this, he relied on "the initial soil analysis, to get that right balance" and then factored in crop demand and leaching over time. He reported soil tests were then conducted every few years to make sure "something slight doesn't escape my attention." Ken drew on his background in agronomy and long-term farming experience:

I study both the soil and the plant growth, and I know what the chemical relationships are in the soil so my sampling only takes place about once every three years and that's part of the underlying philosophy of correcting the soil problems because they change very slowly if you get the right balance.

In addition to the standard soil evaluations offered by university labs, some farmers reported interest in alternatives, including Albrecht's Base Cation Saturation Ratio, the Haney Test, and/or phospholipid fatty acids (PFA). Sarah pursued the latter two because she deemed standard evaluations to be "replacement sufficiency soil testing" which led to "underestimating the nutrient value" of their farm's intricate soil fertility system.

Two farmers, Nate and Chris, reported using annual soil tests to guide their relationships with commercial fertility consultants (e.g., representatives from the Fertrell fertilizer company). By providing updated soil test results, the consultants were able to help the farmers interpret them and work together to strategically use veganic-appropriate amendments. Lastly, some farmers, such as Richie, placed value on the "history of the land" and ongoing observation of texture and "visual quality." Amanda reported that she had not had a soil test, instead relying on insight from the landlord's nephew who held familiarity with the land.

Although the approaches varied, farmers consistently drew a positive correlation between soil testing and maintaining and/or improving soil health as it informed subsequential management practices, such as which soil amendments, green manures, and/or mulches to apply.

Soil amendments

The mindfulness associated with the aforementioned evaluation of soil extended to the sourcing of products with preference often expressed for inputs that were regionally available. For instance, Richie had experience working at California wineries and had observed local farmers utilizing the resulting grape pomace and incorporating them with other crop byproducts, such as rice hulls; he then implemented this practice on his own West Coast farm. In the Northeast, Patricia reported fertilizing and amending her soils through the addition of maple leaves collected by community members, kelp from the nearby Atlantic Ocean, and stone dust from a local gravel company. Vincent expressed interest in the capacity for the soil to be "replenished by the natural local surroundings," such as via leaves and wood chips. He referred to his soil as a bank account and recognized that it may take a decade to fill it up but valued the incremental change of the soil getting healthier and being able to hold onto more nutrients over time.

Some farms located closer to urban areas benefited by being able to access food scraps and compost generated via commercial/municipal food waste recycling efforts. For example, Gina and Peter worked with an organic cafe

they described as a “gold mine” as they would put aside the vegan-friendly certified organic kitchen scraps for them. Chris and Donna produce some of their compost on-farm, but sourcing supplemental “proper [veganic] compost” was difficult. In general, depending on how much compost could be sourced locally or produced on-site, compost was often identified as a limiting factor and a source of stress. Chris described compost as “the most reasonable source of biology that you’re going to find.” Brendan felt strongly that plant-based compost is superior to manure in that it is a “more stable, long-lasting resource-conserving approach,” describing:

... so you actually increase pest problems when you have tons of manures added so the benefit of not having that up and down, you know, cardiogram of fertility and having a more stable approach that finds its, its peak and it’s maintained at that peak and along that entire path you’re learning as a farm or a gardener how to deal with the subtle aspects of fertility and you’re developing your relationship rather than just being like, “Oh, throw some fertilizer on it and throw a seed in there. It’s fine.” ... I think that veganic in its approach in that sense of using compost versus manures is the future of agriculture in many ways.

As part of limiting off-farm inputs, various participants strove for a whole systems approach. Jacob reported not bringing in any amendments from off-site and clarified, “the only mineral supplement we use, if you want to call it that, is our ashes from our cookstove.” Brendan’s framework extended to include strategies he termed “growing soil” and adopting a “complete diet design,” which included seed saving. He expanded on this in his discussion of the approach they use and promote in their educational classes:

When we approach organic forms of agriculture, we believe that everything needs to go another step further beyond veganic and things need to be actually approaching what we determined as a closed loop system ... we’re telling farmers that they need to grow their own compost materials, that they need to market no more than 10 percent of their soil is what it comes down to because when you grow a crop, you’re selling your soil and on top of that, we need to recycle human waste ... Let’s get real about what our definition of sustainability is ... how do we give back more than we take? That’s the thing we’re after. That’s our guiding principle.

Chris critiqued the prevailing “shotgun approach to fertility” and felt that it may produce an “instantaneous result” while potentially creating deficiencies through excess. Linda recognized the privilege of thinking long-term, especially in scenarios where plants may not be flourishing:

So even if it maybe doesn’t flourish, you just keep doing it and the more you do that, the richer it will become ... And so it’s about patience, you know, you don’t rush nature. I had to just step back and say, “Okay, [I am not] going to be able to do that this year.” But by waiting then if I could, you know, slowly do that, it’s going to get better and better every year. If I had went and dumped the chemicals on there, I was right back where I started. Not all farmers have that luxury, you know, because if you’re trying to make a living and create income, you know, what do you do? So I think that’s one of the biggest

obstacles with the natural agriculture, and probably veganic . . . you have to build the soil – nature’s way. You can’t do it man’s way.

In addition to these relatively long-term approaches, there was some reporting of sourcing inputs, such as plant meals (e.g., soybean meal), from commercial agricultural suppliers using an “input substitution” approach. For example, Rodney described his veganic learning trajectory:

So learning to grow veganically, it was pretty much just learning what the inputs would be . . . it’s just, a basically a one-for-one, you know, so when I would have put a compost with manure, I put compost without manure and there’s no calculation really beyond that or you know, when I would have mixed in blood meal into my soil instead I do mustard meal . . .

Lastly, in addition to organic materials and/or fertilizers, some farmers also purchased minerals, such as gypsum. Across the different soil amendments reported by farmers, emphasis was placed on facets such as accessibility, efficacy, and harm reduction, with a majority of farmers alluding to/articulating a commitment to a relatively long-term timeframe for soil stewardship.

Mulch, cover crops, and green manures

In addition to improving organic matter and soil biology through the aforementioned amendments, mulch, cover crops, and green manures were identified by many farmers as important for fertility along with aiding soil structure and biodiversity, water retention, and weed suppression.

Mulch

Mulch materials included resources such as leaves, woodchips, seaweed, straw/hay, and cardboard. Raymond described his cycle as removing crop residue, applying compost, and then following up with mulch. Linda reported benefits to ‘lasagna mulching’ in layers, such as attracting worms, bacteria, and fungi. She placed emphasis on leaving plant roots in the ground for soil breathability, water circulation, and nutrient enrichment.

Sarah applied “dual purpose” hay mulch for “weed suppression of certain weeds until the crop gets to be large enough” and a “nutrient cycling soil organic matter system” once it gets mowed down with the crops. Meanwhile, Vincent used wide plant spacing in beds to minimize competition and relied on shredded leaf mulch to protect the soil.

Cover crops and green manures

Cover crops and green manures were also seen as valuable for soil health. Ken described these as “key to this whole process.” He implemented cover crops

not only during the winter months but also as part of his crop rotation. On Rodney's farm, cover crops are considered a "60% crop" because "it's 60% of our area and if we can use something that's also producing food for ourself while it's feeding the soil, now we're talking about microscaling our agricultural footprint." Examples of crops that served this dual role include rye, oats, barley, corn, amaranth, sorghum, quinoa, sunflowers, and millet.

Sarah reported using green manures on her farm, which were multipurpose:

We have evolved a system where we're trying to grow our own fertilizer. We have living mulches between the crop rows, both the perennial crop rows and the annual crop rows. [It] is a perennial and some of the crops are strip-tilled in between the living mulches and some of them, like the tree fruits, are no-tilled in between . . . So, they are our soil fertility system and our pest management system. So we're always balancing cycling nutrients with maintaining a blooming seeding cover year-round for natural enemies.

In addition to serving as mulch, farmers reported strategically using cover crops for issues like insect management. For example, Gary used a mustard cover crop to suppress weeds and mitigate wireworms in the soil.

Farmers cited a range of tangential benefits tied with mulch, cover crops, and green manures; however, the central motivation reported throughout was nurturing the soil. Although there was some mention of synthetic materials (e.g., plastic mulch or tarps), most farmers focused on inputs that became soil amendments over their life cycle (e.g., green manures being re-incorporated into the soil). Mindfulness around inputs was also expressed through farmers' relationships with natural resources and development of a holistic agroecosystem.

Conserve natural resources, encourage agrobiodiversity, and embrace a whole systems approach

As discussed within the aforementioned principles, sustainability was identified as a primary concern for veganic farmers. Tangentially, on-farm diversity was valued, expressed through decisions such as heirloom seed selections and preserving wildlife habitat. It is important to note that in no instance were veganic farms "animal-free": though farms excluded animal inputs, wild fauna biodiversity was encouraged.

Seed saving

Veganic farmers placed a strong emphasis on organic seeds, with much interest in heirloom, open-pollinated varieties with adaptations for their respective climates. At the time of this research, there were very few, if any, offerings of commercial veganic seeds available for purchase. For farmers who chose to save seeds, motivations were related to diversity, self-reliance, and the resiliency bred through growing out multi-generations on-farm.

Farmers reported that they were seed saving to avoid the animal products that are part of commercial seed production. In addition, farmers noted using seed saving for economic benefits and to maintain control over inputs, which include use of heirloom and other open pollinated varieties. They also shared that they apply the benefits of locally and regionally adapted plant varieties that may include traits conferring greater advantages than commercial varieties offer, such as pest resistance or fertility and water needs.

Amongst farmers who bought in seeds, organic provenance was generally important. Jane only sourced organic seeds and strategically purchased the seeds for her greens (e.g., lettuces) from a company specializing in varieties bred for her climate. She felt there was more flexibility in sourcing for main season crops (e.g., carrots and radishes) and so made those selections based on best price. Ken sourced hybrid seeds in addition to growing and saving open-pollinated seeds. He identified value in both types:

There's a school of thought that says hybrids are, you know, we should avoid because somehow open pollinated varieties are more virtuous . . . if you understand the seed industry that's absolute bunk. Every single article of food that we eat today at some point in its history was a hybrid . . . I do grow open-pollinated varieties because I do want viable food security and I do want things to reproduce true to type.

Chris emphasized the importance of localized seeds, as they “build inherent characteristics and features to those microclimates.” He explained, “I think if you want that bug pressure resistance, if you want the fungal resistance, if you want climate issue resistance . . . the logical next step is on farm seed-sourcing.” Cindy observed that it takes several years for a variety to get acclimatized to a particular climate. On her farm, tomatoes are one of their “big crops,” so they save tomato seeds each season and have found that the plants grown from saved seeds have fewer issues. Linda recalled informally sourcing seeds from a neighbor who gifted her bean seeds that he had been growing out for 20 years. The variety was no longer commercially available; however, with the shared seeds, she was able to produce “prolific” crops and continue to save the seed. Richie aspired to grow all of his own seeds and potentially even have his own line of seeds one day.

Raymond acknowledged the labor-intensive, albeit important, nature of seed saving in saying, “It just seems to me it's so much more valuable, it's worth the labor, to save the seed from your garden of the plant that grew in the space where you want the next generation of the same plant to grow, rather than getting the seeds from somewhere else in the country that's grown under different conditions.”

Allowing plants to complete their full life cycle and go to seed also supported biodiversity, especially pollinators and beneficial insects.

Agrobiodiversity

The importance of biodiversity was framed as both intrinsically and extrinsically valuable to many farmers and generally helped with their goals of limiting and/or eliminating off-farm inputs. Non-human animals, ranging from pollinators to herbivorous mammals, were central to farmers' management approaches. In cases where wildlife was having a negative impact on crops, farmers relied on cultural, physical, and biological controls; chemical and/or lethal controls were a last resort for some, while many avoided them.

Insects were discussed both as challenges to crops and important parts of biodiversity, dependent on the species and respective farm's management approach. Gary described an experience observing ladybugs hatch on nettles early in the springtime, which led him to conserve patches of nettles and pollinator-friendly plants across the farm. He reflected, "I still can't help but feel there's such a difference between a beneficial that has lived multi-generations, and me buying a pack in a cardboard box shipped from California." Instead of purchasing predatory insects (i.e., ladybugs, lacewings, or parasitic wasps), Brendan also created conditions that were favorable to them. He likened his management of the farm to that of a forest ecosystem: "It's a totally different strategy, but it's the same rules. Diversity is resilience . . . health creates health, and you can't create health through death." Ken remarked on the ineffectiveness of many conventional insect pest strategies:

You've got the pest, you introduce the predator, the predator takes care of that pest [for] one life cycle. And if you have a problem again, you introduce the predator again. That's not cost effective. Having diversity is, though, and that's why we have an advantage here. We're surrounded by woods. We have lots of biological diversity here. I do encourage that.

Sarah also emphasized the importance of including biological controls and habitat building in a veganic farm system. She compared, "I think people cheat in organic because . . . you're allowed to use certified organic insecticides, you're allowed to kill insects . . . whereas in veganic we don't want to kill anything. And so, I would say [there's] an even stronger ecological component."

In other words, veganic farmers sought to leverage systems-based biological interventions as a means to avoid insecticides, as farmers (even those organically certified) may use. Though farming in different regions, both Nate and Vincent reported the value of intentionally integrating pollinator strips, exemplified as a perennial flower bed and annual buckwheat planting, respectively. Raymond outlined a system where he incorporated pollinator habitat into garden plots, along with letting crops go to bloom as part of his on-farm seed saving cycle: "They gotta flower to make the seeds. So when they flower, that attracts

the pollinators . . . if you're really following through on the natural cycle and letting the plants go through their full life cycle, you're going to get bees in there anyway."

On Linda's farm, they supported the bird population by not disturbing bird nests in crop rows; she noted this was something she could do given her relatively small scale. Patricia had a variety of bird houses around her gardens, which she felt was helpful for managing insect populations. Nate noted "tons of birds of prey" on field edges, especially in areas that he had not mowed in awhile; the undisturbed landscape also contributed to an increase in the fox population. He summarized, "That's sort of my principle, like if I cannot disrupt things to get my job accomplished, that's what I'm trying to do."

As illustrated through the multi-functionality of saving seeds and providing pollinator forage, many strategies were dual purpose. Richie described his system of barriers to reduce herbivore pressure:

I do use, uh, brush piles and willows, started planting willows for erosion control as well as sort of like natural fencing. And there's also blackberries, that the deer are not willing to trod through, along the edge of the north side of the property, and along the south side there's the river. So they do come up, cross the river on their migration paths. So I make brush piles that are kind of like fences, it's kind of like, ultimately it'll be like hugelkultur. Like, six foot tall, seven foot tall hugelkultur like mounds that are non-penetrable by living beings or large predators.

Disease

Participants reported some disease pressure, but most noted plant diseases were manageable. One of the leading strategies for navigating plant disease was crop rotation because it both interrupts pest cycles and provides benefits to the soil. Brendan explained:

So good crop rotations, not planting the same plant family year after year, and using legumes to help fix nitrogen is key to keeping a balanced soil. And then we just have a very diverse system. So we're not just growing salad greens. We're growing complete diets, we're growing seeds.

Participants also noted removing diseased plant material, using irrigation to limit excessive moisture, and growing inside protected spaces (e.g., a high tunnel) to control disease. Additionally, some sought disease-resistant seeds and saved their own seeds that were less susceptible to disease.

Another strategy for navigating disease was crop timing. Ken noted that he staggered tomato plantings to manage phytophthora infections, which he found were otherwise not effectively treated with biological fungicides. Nate also relied on crop successions, noting, "I just feel like plants, they have like their golden time period of being alive and trying to hit that and just like things will die, it's okay."

There were limited reported uses of fungicides, with many farmers explicitly against applying sprays. When fungicides were used, they were organic sprays such as copper, sulfur, or neem. One farm that grew many perennial fruit trees used an organic mineral mix to counter against issues such as brown rot in stone fruit.

Rodney emphasized the importance of healthy plants, which are less susceptible to disease. When Amanda encountered a diseased plant, she took the time to observe and draw on her underlying approach, “What’s natural, what naturally happens in the wild, and then how can you replicate that?” Brendan alluded to the bigger picture of ecosystem health by prioritizing soil nutrition and favorable conditions for plants. He summarized:

... The majority of disease, whether it’s plants, humans or whatever, comes with stress ... and so what you see is the more pesticides we spray, the more diseases we have, because the pesticides are killing the pests on the plant, but they’re killing everything in the soil. The soil is the foundation of plant health. So if we start with a healthy soil and it’s a good balanced nutrition and we have a good approach to it and a good attitude towards it and we’re constantly looking at earth, water, air and fire and the four elements and trying to make sure that there’s enough warmth, the proper moisture level, good breathing happening, and the right nutrient load because the earth element, we’re going to be on our way towards maintaining a good environment which is going to promote the health of the plant ... so the diseases that we see are usually a result of mismanagement.

Avoid exploitation of, and center compassion for, all sentient beings and the environment

In discussing both their practical on-farm approaches and their ethical philosophies regarding veganic farming, a majority of farmers raised concerns regarding the prevailing corporate agrifood system and the related systems of exploitation and oppression. As Jacob observed, “If you’re not confronted with moral dilemmas several times every day, then you’re just not paying attention. They’re there, you’re just ignoring them, like someone else is dealing with it.” At the farm-scale, these issues were navigated through a range of strategies: from boycotting farmed animal inputs to developing diverse agroecosystems to promoting a standard of farming that advocates for both animal and human rights. Some of these practices were outlined in the aforementioned principles; below, more guiding ethics and worldviews are discussed.

Animal welfare/rights

Nearly all participants identified as vegetarian or vegan, which framed their perspectives on animal welfare and rights. Brendan exemplified this in his efforts to “not hurt anything” and felt that “as a vegan farmer, I think the responsibility is to do everything you can to eliminate the suffering and the death of animals.”

As a means to act on these values, many farmers sought to boycott animal agriculture to dismantle prevailing systems of exploitation and oppression. One form of boycott was severing commercial ties with animal agriculture. Jane noted that fishing industries, in order to economically benefit from bycatch, promote the use of fish emulsion for farm fertility. She suggested that consumers have the power to disincentivize fishing companies from long line trawling generating bycatch by removing a market for it.

Rodney, a vegan farmer, avoided purchasing animal inputs because “the impact that my actions would have would be more detrimental than if I were to just eat whatever I wanted.” He expanded,

So if you’re buying bloodmeal or bonemeal . . . you’re basically supporting the meat industry, that in our diet we were trying to not do, but through our business . . . we would have spent thousands and thousands of dollars supporting them.

Roger shared Rodney’s sentiment in advocating that vegan farmers, especially, should avoid animal-based fertilizers. Roger identified large-scale commercial livestock farms as the “common enemy,” which should not be supported. Nate noted that, despite it being allowed in organic agriculture, many animal byproducts come from “poorly sourced places” and emphasized that he does not want to support the “waste products of concentrated [animal] farming operations.”

Chris’ views on the impact of sourcing were holistic, including sourcing beyond the farm. His diligence extended to relatively minor inputs, as well, such as avoiding peat moss due to the trace amounts of manure used in manufacturing as a pH adjustment. He expanded:

I think that when you say veganic, though, I think you’re going much deeper into that idea that nothing’s been harmed. Not just on this farm nothing’s been harmed, but nothing that has come onto this farm has caused harm.

Human rights/wellbeing

Animal rights were often closely entangled with sentiments about concern for humans, including agricultural labor and consumer health. Gary reflected on his transition to veganic:

The same way as I made a decision in my life to eat organic because I didn’t want to support the likes of Monsanto and all these chemical companies, and I’m worrying about the workers that are having to deal with these sprays, etc. And then it just seemed a natural carry on . . . I’m vegan, I want to eat food that doesn’t have slaughterhouse byproducts on it . . . so to me, caring about justice for workers just seems obvious.

Wendy highlighted the awareness of her fellow farmers:

Most veganic farmers that I know are for fair pay for their workers [and] for health insurance for their workers, they’re wanting to make it a better system for those that are

on the farm . . . it's bringing awareness and trying to get people out of the slaughter industry, which is a very unhealthy mentally, emotionally, spiritually place to be.

In addition to farm worker rights concerns, there was consideration given to consumer health in both producing nutrient-dense food and food that is free of farmed animal contaminants. Cindy noted that her farm produced crops that were often the focus of national food safety outbreaks (e.g., lettuce) and felt there was a gap in consumer understanding that "It's not the produce itself that [is the issue], it's how it's grown. It's using animal products" that creates the problem. Roger pointed out that entirely plant-based fertility systems greatly reduce the potential for disease outbreaks from farmed animal manures.

From meeting/exceeding US Organic practices to expressing consideration for sentient beings, the range of aforementioned principles was each related to farmers' knowledge at the individual level, along with the exchange of knowledge.

Observe, reflect, experiment, collaborate, and share knowledge

Various factors influenced veganic farmers' exploratory farming approaches and interest in networking and exchanging knowledge. These ranged from a lack of existing information to an ethical commitment to advancing veganic farming.

Adaptive learning/trial-and-error

Overall, participant farmers were cautious about adopting and/or promoting a one-size-fits-all approach and instead framed decisions in the context of local conditions (e.g., climate; rural vs. urban) and histories. This translated to prioritizing broad principles over prescribed practices. Chris remarked:

[Veganic agriculture] requires you to think. It requires you to reason from cause to effect and it requires you saying, "In the current circumstances, what is the right application?" because it's not going to be the same anywhere. I mean, there are principles and I think that's . . . you can't create policies. We need to create principles.

Sarah pointed out, "When you deal with ecological systems, there aren't recipes." Drawing on her background working with universities, she reflected, "What drove me crazy about academia is that we like to come up with pamphlets and books and articles for the lowest denominator. And so we don't really say much." Ken, who also has an academic background, shared a similar sentiment when saying, "So crop timing is really important, that's specific to individual growers in their individual microclimate. This is why you can't write manuals for this stuff . . . we've got to focus on the principles that we're trying to achieve."

Aside from inherent curiosity and/or interest in learning, many farmers had to embrace independent exploration out of necessity. Chris' partner Donna acknowledged the difficulty in establishing a veganic operation:

It's caused us to have to learn stuff we would never have to learn, so he learned about the peat moss because we're forced to make our own starts mix, because there's not a starts mix on the market that doesn't have a charge [non-veganic pH adjustment] . . . I think he's just now [made a blend] that's working where the plants are thriving and they're making roots . . . it's taken six years for him to get a blend down, because we didn't know about all these details.

Farmer knowledge exchange

At the time of this research, veganic farmers were largely spread out across the United States. A majority of farmers were not well connected with other veganic farmers or the broader US/global veganic agriculture movement, which many acknowledged would be ideal for farmer-to-farmer information sharing. Instead, they looked to regionally accessible, and typically organic rather than veganic, farming peers/mentors; farming organizations; and/or agricultural extension service providers for insight. The tradeoff here was that they then had to reinterpret information to fit within their veganic framework.

Wendy found being part of “mainstream agricultural groups” to be helpful to “get ideas and to commiserate.” She connected specifically with other veganic farmers on social media (e.g., Facebook and Instagram), which helped bridge the geographic gap. Sarah reported that when connecting with other farmers it was valuable to use the term “eco-organic” rather than veganic to overcome the political tensions that may be tied to veganic. Raymond saw value in connecting with *all* farmers:

I think there's benefit to more networking and connection between everyone that's doing sustainable work, regardless of what their banner may be . . . I'm concerned about the dichotomies and dualisms as they crop up, and especially in the sustainability community, the sustainable and resilient community, with the silos and the tensions and the oppositions between the right way to do something, whether it's organic or biodynamic or permaculture or now veganic, and it seems like we have so many challenges that seem almost impossible at this point, that we kill ourselves squabbling over what amounts [to] inconsequential stuff when we should be working together to try to recreate a sustainable world. We don't have a lot of time left. So my general approach to things is we all need to work together.

More experienced farmers who had reservations regarding networking and the educational labor that might fall to them still fundamentally supported the establishment of a community and respective collective movement promoting veganic agriculture. However, disparities among participants in pathways to farming, years of experience, and, by extension, knowledge held by farmers

translated into the types of exchanges they sought. Sarah, an academic and long-time farmer, shared how her priorities have shifted:

Most of the veganic farmers I've spoken to haven't come from a farming background. They've come from a more urban background so they're learning everything! So I kind of feel like I'm teaching them basic horticulture first . . . I'm not opposed to that. I'm just not as interested in that as I used to be. Now I really want to understand this ecosystem.

Discussion

The array of concepts outlined in the above principles showcases veganic agriculture as a multifaceted approach rooted in both agronomic crop production and ecological stewardship. In reviewing agroecology and veganic agriculture principles, there is a significant amount of overlap between the two approaches (Table 4).

Table 4 was developed based on objective reasoning resulting from reviewing the prevailing approaches relative to each veganic principle. In nearly all cases, each agroecological principle could be applicable at some angle to a veganic principle; the table reflects the most explicit, forward-facing areas of overlap.

The rest of the discussion considers complementarities between veganic agriculture and agroecology using the five veganic principles identified above as a framework.

Table 4. Veganic principles and their relationship to agroecology principles.

Veganic Principle (horizontal) Agroecology Principle (vertical)	1) Draw on strategies that meet or exceed US Organic standards	2) Promote soil health and limit off-farm inputs	3) Conserve natural resources, encourage agrobiodiversity, and embrace a whole systems approach	4) Avoid exploitation of, and center compassion for, all sentient beings and the environment	5) Observe, reflect, experiment, collaborate, and share knowledge
Recycling	X	X	X	X	
Input Reduction	X	X	X	X	
Soil Health	X	X	X	X	
Animal Health*	—	—	—	—	—
Biodiversity	X	X	X	X	
Synergy	X	X	X	X	
Economic Diversification			X		
Co-creation of Knowledge					X
Social Values and Diets	X		X	X	
Fairness				X	
Connectivity				X	X
Land and Natural Resource Governance	X	X	X	X	X
Participation					X

*This table assumes that veganic agriculture principles of not using any animal products will be incorporated into agroecology principles.

Draw on strategies that meet or exceed US organic standards

The distancing from more mainstream, commercialized, and regulated agriculture is a value reflected within both veganic agriculture and agroecology. The veganic farms in this study adhered to many aspects of the US Organic Standards, whether certified as such or not, yet also constitute a response to the shortcomings of the concentration and consolidation of organic agriculture. Veganic agriculture serves as a more holistic alternative to organic agriculture and provides farmers autonomy that reflects their ethics and/or land stewardship priorities. At the time of the study, there were no veganic agriculture regulatory/certification entities in North America, underscoring the autonomy that has characterized veganic agriculture in the region (the North American Veganic Certification Standard (NAVCS), a grassroots entity, was later introduced in 2023).

Similarly, while there are parallels between organic and agroecological practices, agroecology typically distances itself from government and/or centralized regulatory/certification organizations. Instead, farmer collectives and cooperatives are common within agroecological communities of practice – to a far greater degree than in the generally disconnected veganic sphere – and agroecological farms are regionally adapted and reflexive to the needs of the farmers and surrounding communities.

Promote soil health and limit off-farm inputs

Practices related to soil are central in both veganic agriculture and agroecological farming. Soil health and building practices were the most robust portion of the veganic dataset, encompassing a wide range of strategies and the respective ethical rationales guiding them. For both short- and long-term soil health, farmers drew upon observation and soil testing to inform applications of soil amendments (e.g., minerals; plant meals; compost). They were also thoughtful in the integration of mulch and cover crops/green manures, along with the tools/equipment that they used for soil maintenance and transitions.

The ecology-centered approach demonstrated by veganic farmers is aligned with agroecology; “soil health” and “input reduction” are explicit agroecology principles. In addition to offering increased ecosystem and crop viability, this supports distancing from the prevailing corporate agri-industrial complex and the principle of “land and natural resource governance.”

Conserve natural resources, encourage agrobiodiversity, and embrace a whole systems approach

Related to the principle of promoting soil health and limiting off-farm inputs, many veganic farmers sought to create a holistic agroecosystem

that leveraged on-farm resources. The practices associated with this included seed saving, supporting the expansion of biodiversity in fauna and flora, and fostering systems resilient to disease and/or other disruption.

There was strong overlap between this veganic principle and a majority of agroecological principles, which is expected given the systems emphasis of agroecology and importance placed on sociocultural and regional influences. This was the sole veganic principle that explicitly included “economic diversification” reflected through farmers growing a variety of crops for increased resiliency.

Avoid exploitation of, and center compassion for, all sentient beings and the environment

Every veganic farmer interviewed placed emphasis on limiting harm to non-human animals. Concern for animal welfare/rights was extended both to wildlife and farmed animals (particularly through boycotting animal agriculture). In most cases, this harm reduction was also clearly articulated as an extension to all living entities, including humans and the natural environment. On a basic conceptual level, this veganic principle fits well with agroecology, especially from the lens of promoting wild fauna on-farm and considering human welfare (and, by extension, the social movement roots of agroecology).

- (1) The “animal health” principle, however, may be a major point of divergence as Wezel et al. (2020) propose that this principle references the treatment of farmed animals for food production, which is antithetical to veganic agriculture. The normativity of animal husbandry and use of farmed animals’ wastes in agroecology is potentially the most substantial difference between the two approaches to agriculture.
- (2) Observe, reflect, experiment, collaborate, and share knowledge.

Veganic farmers placed value on developing and improving upon practices. Given both the lack of information available and the experimental nature of farming, many reported high degrees of adaptive learning and trial-and-error. By extension, there was also interest in farmer knowledge exchange, both within and outside of the veganic community.

The aspects related to the generation and co-creation of knowledge within veganic agriculture strongly parallel elements of agroecology, such as the co-creation of knowledge and participatory action research (PAR). Agroecology has spread globally through independent inquiry paired with collaborative learning and proliferation in the grassroots; veganic agriculture shows potential for a similar magnification through farmer-led practices, supported by a developing science, and a collective movement.

Conclusion

The emergent principles of veganic agriculture clarify that this approach values ecological farming, a broad spectrum of sentient life, and experimentation and knowledge creation. A comparison of veganic and agroecological principles reveals substantial practical and ethical parallels. It is crucial to acknowledge these commonalities in the context of the ruinous environmental, social, and ethical “externalities” of industrial agriculture, ranging from widespread water and air pollution to farmworker injustice to animal exploitation. In sharing so many values, from care for soil health to respect for biodiversity to investment in knowledge co-creation, agroecology and veganic agriculture are positioned to move as a more united front against the behemoth that is corporate, industrial agriculture. Our analysis underscores that there is ample common ground on which to move forward together both strategically and tactically (e.g., Holt-Giménez 2017). For instance, both veganic agriculture and agroecology already take firm positions against industrial animal agriculture and farmworker exploitation, and both espouse commitments to on-farm biodiversity. Acknowledging these shared stances and leveraging them into shared projects or campaigns – such as against the ongoing use of neonicotinoids – could follow.

In addition to the potential for alliances, the compatibilities also suggest that agroecology and veganic agriculture are primed for cross-pollination toward strengthening their respective endeavors, from participatory research to problem-solving around farming practices to sociopolitical movements. In particular, the depth of agroecological perspectives on and experiences with community organizing (e.g., the economic and practical values of cooperatives) may be valuable to veganic farmers who seek to establish and grow regional, niche veganic markets. Collaborative research between practitioners and academics, such as PAR, is a practice with close ties to agroecology that might strengthen the science of veganic agriculture, thus conferring more legitimacy and enabling extension educators to advise on commercially viable, region-specific practices (Utter and Seymour 2021). Insights from the grassroots certifications that have emerged for veganic agriculture and products could help agroecology toward achieving goals, such as financial incentives for farmers, greater consumer awareness regarding practices, and increased legitimacy for policy reform. Exchanges between the two approaches could also help their respective movements navigate similar challenges related to regulation and the associated risks of losing autonomy within the grassroots to co-optation by industrial agriculture. Beyond the initial exploratory work discussed in this paper, further research is needed to explicitly quantify the presence and relative priority of the aforementioned veganic and agroecological principles across an array of farms practicing veganic agriculture and/or agroecology.

Though our analysis suggests that agroecology and veganic agriculture share numerous principles, one notable exception is the respective farms' positions on animal husbandry and animal byproduct incorporation. The distinct views that are held regarding animals' roles in the veganic approach provide an opportunity for a deeper exploration in the agroecological field, which has not fully engaged with questions of animal rights or justice for animals. Without taking an "either-or" approach, there is room for creative ways to adapt or adopt veganic views on animals, even if partially, into agroecological research and practice. An example of this relevant to the agroecological concern for animal health is the veganic agriculture-associated practice of providing sanctuary to formerly farmed animals. Generally, the question of animals and animal justice in agroecology represents an area that could benefit from future thinking, research, and dialogue.

With their substantial commonalities, veganic agriculture and agroecology are well positioned to collaboratively engage on a range of issues and corresponding solutions. These range from soil regeneration to farmer livelihood support, to dismantling prevailing capitalist systems of oppression and exploitation, which cause direct harm to humans, non-human animals, and ecosystems. As two grassroots, political farming movements, they also have perspectives to offer one another that may support growth and strengthen sovereignty. Intensifying regional and global conditions (e.g., climate change) are likely to catalyze the need for increasingly novel agrifood solutions. It is paramount that those in the alternative agriculture sciences, practices, and movements unite in the face of these diverse issues. This could offer an opportunity to develop grassroots and transdisciplinary solutions, which could emerge from more intentional synergies between veganic agriculture and agroecology.

Note

1. For example, in 1938 Maye E. Bruce, gardener and founding member of England's Soil Association, authored "From Vegetable Waste to Fertile Soil," which set the foundation for later authors, including the O'Briens. An additional mid-century example is from the United States in 1953 when Scott Nearing presented "Food without Animal Residues" at the 13th International Vegetarian Union Congress in Sigtuna, Sweden; he discussed a 20-year gardening trial in Vermont, centered on restoring the soil without farmed animal inputs (Nearing 1953).

Acknowledgments

We would like to thank the veganic farmer participants who made this research possible through their generous knowledge/experience sharing, along with our crowdfunding backers on www.experiment.com.

Author contributions

CRedit: **Alisha Utter:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Visualization, Writing – original draft, Writing – review & editing; **Mona Seymour:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Supervision, Visualization, Writing – review & editing; **V. Ernesto Méndez:** Supervision, Validation, Writing – review & editing; **Jason Parker:** Supervision, Validation, Writing – review & editing.

Disclosure statement

The authors report there are no competing interests to declare.

Funding

This work was supported via crowdfunding on www.experiment.com.

Data availability statement

The data set used is not publicly available. All data was collected with adherence to standards set by the Institutional Review Boards of Loyola Marymount University and the University of Vermont.

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